

IN THE CLAIMS

1. (Currently Amended) A method of a blind speech user interference cancellation (SUIC) for a high speed downlink packet access (HSDPA) comprising the steps of:

receiving (100) an input signal (22) in a discrete-time domain by a receiving and storing means (24) of a blind SUIC speech user interference cancellation receiver (20, 21) for a high speed downlink packet access; and

separating (104) the input signal (22) to a desired high speed downlink packet access HSDPA signal (34, 66) with known spreading codes and to an interfering speech user signal (48, 70) with unknown spreading codes using a Walsh correlator (32) of the blind SUIC speech user interference cancellation receiver (20, 21) for further processing.

2. (Currently Amended) The method of claim 1, wherein the receiving and storing means (24) having a memory buffer for storing the input signal (22).

3. (Currently Amended) The method of claim 1, further comprising the steps of:

generating (106) a speech user interference (SUI) signal (52) by a soft-decision on the interfering speech user signal (48) using an SUI a speech user interference estimation means (46) of the blind SUIC speech user interference cancellation receiver (20);

generating (107) an adjusted signal (30) by subtracting the SUI—speech user interference signal (52) from the input signal (22) using a first adder (28); and providing (108) the adjusted signal (30) to the Walsh correlator (32).

4. (Currently Amended) The method of claim 3, further comprising ~~the steps of~~:

separating (110) the adjusted signal (30) to a further desired high speed downlink packet access HSDPA signal with the known spreading codes and a further interfering speech user signal with the unknown spreading codes using a Walsh correlator (32); and

generating (112) a soft-decision HSDPA—high speed downlink packet access signal (37) from the further desired high speed downlink packet access HSDPA signal using a one-stage soft-decision parallel interference cancellation (SD-PIC) receiver (36).

5. (Currently Amended) The method of claim 4, wherein the soft-decision high speed downlink packet access HSDPA signal (37) is a blind SUIC—speech user interference cancellation receiver output signal if a final multistage is reached based on predetermined criteria.

6. (Currently Amended) The method of claim 4, further comprising ~~the steps of~~:

generating (115) a hard-decision high speed downlink packet access HSDPA signal (38) based on the soft-decision

~~HSDPA~~ high speed downlink packet access signal (37) using a hard-decision means (41);

generating (116) a multiple access interference (~~MAI~~) signal (42) based on the hard-decision ~~HSDPA~~ high speed downlink packet access signal (38) using an ~~MAI~~ multiple access interference estimation means (40) of the blind SUIC speech user interference cancellation receiver (20);

generating (118) a further adjusted signal (60) by subtracting the ~~MAI~~ multiple access interference signal (42) from the input signal (22) using a second adder (58); and

providing the further adjusted signal (60) to a further Walsh correlator (32a).

7. (Currently Amended) The method of claim 1, further comprising ~~the step of~~:

generating (120) a soft-decision ~~HSDPA~~ high speed downlink packet access signal (67) from the desired ~~HSDPA~~ high speed downlink packet access signal (66) using a one-stage soft-decision parallel interference cancellation (SD-PIC) receiver (36).

8. (Currently Amended) The method of claim 7, wherein the soft-decision high speed downlink packet access HSDPA signal (67) is a blind SUIC speech user interference cancellation receiver output signal, if a final multistage is reached based on predetermined criteria.

9. (Currently Amended) The method of claim 7, further comprising ~~the steps of~~:

generating (123) the hard-decision high speed downlink packet access HSDPA signal (68) based on the soft-decision HSDPA high speed downlink packet access signal (67) using a hard-decision means (41);

generating (124) a multiple access interference (MAI) signal (74) based on the hard-decision HSDPA high speed downlink packet access signal (68) using an MAI multiple access interference estimation means (40) of the blind SUIC speech user interference cancellation receiver (20);

generating (126) an adjusted signal (64) by subtracting the MAI multiple access interference signal (42) from the input signal (22) using a first adder (58); and

providing (127) the adjusted signal (64) to the Walsh correlator (32).

10. (Currently Amended) The method of claim 9, further comprising the steps of:

separating (128) the adjusted signal (64) to a further desired HSDPA high speed downlink packet access signal with the known spreading codes and a further interfering speech user signal with the unknown spreading codes using a Walsh correlator (32);

generating (132) a speech user interference (SUI) signal (72) by a soft-decision on the further interfering speech user signal using an SUI a speech user interference estimation means (46) of the blind SUIC speech user interference cancellation receiver (20);

generating (108) a further adjusted signal (76) by subtracting the SUI—speech user interference signal (52) from the input signal (22) using a second adder (28); and

providing the further adjusted signal (76) to a further Walsh correlator (32a).

11. (Currently Amended) A blind speech user interference cancellation (SUEC) receiver (20, 21) for a high speed downlink packet access, (HSDPA) comprising:

a Walsh correlator (32), responsive to an input signal (22) in a discrete-time domain, ~~for providing configured to provide~~ two signals for a further processing by separating the input signal (22) to a desired high speed downlink packet access HSDPA signal (34, 66) with known spreading codes and to an interfering speech user (ISU) signal (48, 70) with unknown spreading codes. — and

~~receiving and storing means (24), responsive to the input signal (22), for storing the input signal (22) and for providing the input signal (22) to the Walsh correlator (32, 32a).~~

12. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (20) of claim 11, further comprising:

~~an SUI—speech user interference estimation means (46), responsive to the interfering speech user signal (48), for providing configured to provide a speech user interference (SUI) signal (52) by a soft-decision on the interfering speech user signal (48); and~~

a first adder (28), responsive to the SUI speech user interference signal (52) and to the input signal (22), for providing configured to provide an adjusted signal (30) to the Walsh correlator (32) by subtracting the SUI speech user interference signal (52) from the input signal (22), wherein the Walsh correlator provides is configured to provide a further desired high speed downlink packet access HSDPA signal with the known spreading codes and a further interfering speech user (ISU) signal with the unknown spreading codes.

13. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (20) of claim 12, further comprising:

a one-stage soft-decision parallel interference cancellation (SD-PIC) receiver (36), responsive to the further desired high speed downlink packet access HSDPA signal, for providing configured to provide a soft-decision high speed downlink packet access HSDPA signal (37).

14. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (20) of claim 13, wherein the soft-decision high speed downlink packet access HSDPA signal (37) becomes is a blind SUEC speech user interference cancellation receiver output signal if a predetermined criterion is met, based on predetermined criteria.

15. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (20) of claim 13, further comprising:

a hard-decision means (41), responsive to the soft-decision HSDPA—high speed downlink packet access signal (37), ~~for providing~~ configured to provide a hard-decision HSDPA—high speed downlink packet access signal (38);

~~an MAI—multiple access interference estimation means~~ (40), responsive to the hard-decision HSDPA—high speed downlink packet access signal (38), ~~for providing~~ configured to provide a multiple access interference (MAI) signal (42); and

a second adder, responsive to the MAI—multiple access interference signal (42) and to the input signal (22), ~~for providing~~ configured to provide a further adjusted signal, (62) by subtracting the MAI—multiple access interference signal (42) from the input signal (22), wherein the further adjusted signal (64) is provided to a further Walsh correlator (32a).

16. (Currently Amended) The blind speech user interference cancellation (SUIC)—receiver (21) of claim 11, further comprising:

a one-stage soft-decision parallel interference cancellation (HD-PIC)—receiver (36), responsive to the desired high speed downlink packet access HSDPA signal, for providing a soft-decision high speed downlink packet access HSDPA signal (67).

17. (Currently Amended) The blind speech user interference cancellation (SUIC)—receiver (21) of claim 16, wherein the soft-decision high speed downlink packet access HSDPA signal (67) becomes is a blind SUIC speech user

interference cancellation receiver output signal based on  
if a predetermined criteria criterion is met.

18. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (21) of claim 17, further comprising:

a hard-decision means (41), responsive to the soft-decision high speed downlink packet access HSDPA signal (67), ~~for providing configured to provide~~ a hard-decision high speed downlink packet access HSDPA signal (68);

~~an MAI multiple access interference estimation means~~ (40), responsive to the hard-decision high speed downlink packet access HSDPA signal (68), ~~for providing configured to provide~~ a multiple access interference (MAI) multiple access interference signal (74); and

a first adder (28), responsive to the ~~MAI multiple access interference signal~~ (74) and to the input signal (22), ~~for providing configured to provide~~ a further adjusted signal (64) to the Walsh correlator (32) by subtracting the ~~MAI multiple access interference signal~~ (74) from the input signal (22), wherein the Walsh correlator (32) ~~provides is configured to provide~~ a further desired high speed downlink packet access HSDPA signal with known spreading codes and a further interfering speech user signal with unknown spreading codes.

19. (Currently Amended) The blind speech user interference cancellation (SUEC) receiver (21) of claim 18, further comprising:

an SUI—speech user interference estimation means (46), responsive to the further interfering speech user signal, for providing configured to provide a speech user interference (SUI) signal (72) by a soft-decision on the further interfering speech user signal; and

a second adder (28), responsive to the SUI—speech user interference signal (72)—and to the input signal (22), for providing configured to provide a further adjusted signal (76)—to a further Walsh correlator (32a)—by subtracting the SUI—speech user interference signal (72) from the input signal (22).

20. (New) The blind speech user interference cancellation receiver of claim 11, further comprising:

receiving and storing means, responsive to the input signal, configured to store the input signal and for providing the input signal to the Walsh correlator.